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Section 2.04.3

Site Description and Land Use Information

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Site Description and Land Use Information²

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Section 2.04.3

Site Description and Land Use Information

1.0 Pre-Mining and Existing Land Use at the New Horizon Mine

General

Historical land use in and around the New Horizon Mine has been predominantly related to agriculture. The white man actively began settling the area in the ~~last~~late 1890's, establishing livestock operations to take advantage of the large grazeable tracts of native rangeland. Around 1900, the town of Nucla was established and became a center of agricultural activity with the completion of the Colorado Cooperative Irrigation Ditch in 1910. The completion of the ditch and the delivery of San Miguel River water to the First and Second Park areas surrounding Nucla provided a means for viable agricultural production in an area with a near desert climatic regime. The extensive surrounding lands which remained in native rangeland continued to be used for livestock production and hunting of wildlife, primarily big game.

In 1898, the uranium bearing ore carnotite was discovered in the area and uranium mining began its roller coaster ride to importance as a major industry in the area. When mining of carnotite declined after 1923, the mining of vanadium for steel alloys became an important industry through World War II. Also during World War II, uranium mining began gaining importance again and boomed in the 50's 60's and 70's as nuclear power and weapons' demands increased. The early 80's saw a decline in the uranium mining and processing industries, with activity virtually at a standstill by 1986.

The mining of coal had been ongoing on a small scale from the early to mid 1900's. These mining operations were small underground operations generally run by individuals. The present New Horizon surface coal mine, the largest coal operation in the area, was initially opened north of the main permit area (in the vicinity of the NH1 area) in 1958 by the Edna Coal Company as the Navajo Mine. In September of 1963, Peabody Coal Company (PCC) purchased the mine, renamed it the Nucla Mine and operated it until temporary cessation of activities in 1983, when the Naturita Power Plant was deactivated. The mine was placed into inactive status in 1988. The power plant at Naturita was then reconstructed as a recirculating fluidized bed type power plant to test this type of new boiler technology. Associated with the power plant reconstruction, Western Fuels-Colorado (WFC), a Limited Liability Company (WFC), purchased the Nucla Mine in 1992 (Permit C-81-008)

and renamed it the New Horizon Mine. The New Horizon Mine is located on the NH2 Permit Area, which is about .5 mile south of the original Nucla Mine. The two permit areas are separated by Tuttle Draw, which is an erosional feature that divides the coal seams into two distinct economic units. New Horizon mine has been supplying coal to the Naturita plant since its opening in 1992. Annual production from PCC's Nucla Mine totaled 90,000+ tons in the earlier years, and WFC's New Horizon Mine produces about 350,000 tons per year.

Currently, agriculture and seasonal tourism related to hunting are the primary uses in the area. The uranium industry is has been essentially dead and the ore processing plant once operated by Union Carbide (now UMETCO) at Uravan is in the final stages of eradication and reclamation. As of 2009, there are some indications that the uranium industry could be active once again in the area.

2.0 Adjacent Land Use

Land use adjacent to the New Horizon Permit area is either irrigated hay/cropland agricultural land (irrigated pastureland or irrigated cropland), abandoned cropland or native rangeland used for livestock grazing and wildlife habitat. Specifically, lands to the west and north of the permit area are predominantly irrigated or abandoned irrigated cropland, while lands east of the permit area are predominantly native rangeland, irrigated pasture or residential sites. Lands to the south of the permit area are dominated by both irrigated and abandoned irrigated cropland agricultural land, as well as native rangeland until south of Calamity Draw, where irrigated cropland agricultural land dominates once again.

Active cropland and irrigated pasture areas are ~~all~~ irrigated because of the very dry climatic conditions experienced in this region. Irrigation water is delivered to the area by the Colorado Cooperative Ditch. A system of lateral ditches deliver water to the irrigated fields whereupon it is spread on the individual fields. One of these laterals, the West Lateral, bounds or traverses portions of the permit area. Improvements are generally limited to land leveling, where soils are deep enough, or to more efficient delivery/water spreading systems. Cropland Agricultural land has been abandoned in several areas because of either poor water availability, poor site characteristics related to topography and flood irrigability or poor economic return. Poorer sites or areas with shallow soils are in irrigated hay/pasture production while the deeper soils areas are in crop production or crop/hay rotations. Crops normally grown are annual grains, alfalfa or corn for silage. Irrigated hay or pasture is predominated by alfalfa with grasses such as smooth brome (Bromus inermis), orchard grass (Dactylis glomerata) or introduced wheatgrasses wheat grasses (Agropyron

sp.) included in varying degrees of composition to improve forage quality.

Native rangeland areas are used for livestock grazing and by wildlife. Classes of livestock in order of importance are cattle, sheep and horses. In terms of land use, the more important wildlife species are mule deer and elk. However, a wide variety of small mammals, predators, passerine and upland game birds, and raptors frequent the area. While mule deer may be found in the immediate area year round, elk are more likely to be found in the area during the winter season after migrating from summer season range located in the adjacent high country. In the fall, the quality of big game hunting and the natural beauty of the area draw a large number of in-state and out-of-state hunters to the area, providing a sizeable boost to the local economy. Both in-permit and out of permit lands of all classes support seasonal wildlife populations. Predominant native vegetation types and wildlife habitat include the upland sagebrush, pinyon-juniper, and areas of riparian vegetation associated with Tuttle Draw and several small tributaries. It is probable that irrigation tailwater has created or significantly enhanced areas of riparian vegetation.

3.0 Historic and Existing Land Use on the Permit Area

The original permit area consisted of lands north of Tuttle Draw mined by predecessor companies from 1958 to 1983. This original area, as modified by reductions due to final bond releases, is now known as NH1 portion of the current permit. In the early 1980's, one of the predecessor companies (Peabody) permitted, but did not mine an area south of Tuttle Draw and west of the Town of Nucla. This area, labeled Nucla East by Peabody, is now known as New Horizon 2 (NH2) by Western Fuels. The historic land use on the principal (NH2) area has been mostly irrigated pasture and native rangeland. Existing use for NH2 is irrigated fields (mostly irrigated pastureland), abandoned irrigated fields, native rangeland, mining disturbances, mine-related activities, and reclamation. In most cases, pre-mine irrigation methods utilized flooding the land using gravity. Sideroll irrigation, which is more efficient, was generally not used.

The much smaller NH1 area is the remaining parcel of land from pre-WFC mining that has not yet been granted a full bond release. This mine permit area and surrounding released land, prior to 1958 when mining activities were begun by the Edna Coal Company, was fairly well split between irrigated ~~crop/hayland~~ agricultural land and native rangeland/wildlife habitat. Irrigated agricultural land is meant to encompass irrigated pasture, cropland and hayland. These are differentiated by the amount of alfalfa in the fields as well as the intensity of the management of the irrigation. By the time Peabody purchased the Navajo Mine in 1963, nearly all irrigated lands south of the east-west county road had been abandoned and approximately one quarter of the present permit area

was affected by mining activities. In May 1983, Surface Mine Permit No. C-008-81 was approved for the Nucla Mine (Original NH1). At that time, approximately two-thirds of the original permit area was affected by mining activities and all irrigated lands south of the county bypass road and west of the north-south county road had been abandoned. The Nucla Mine (composed of the Nucla and Nucla East areas) was purchased by WFC in 1992. The name was changed to the New Horizon Mine (with New Horizon 1 and New Horizon 2 areas corresponding to the Nucla and Nucla East areas respectively). Existing land use on the NH1 mine permit area is predominated by irrigated ~~hayfield~~pasture, native rangeland and reclamation:— of old coal mine areas.

It has been a normal practice for farmers to historically move water from one field to another within their property or sell water to other people in the area to allow them to irrigate another field for some time interval. Map 2.04.3 Pre-Mine Land Use shows the uses recorded by Peabody for the permit area south of BB Road and east of 2700 Road. This was the original permit area. The amended permit area includes all other areas from the study done in 1998. The aerial photo included on Map 2.04.10-1 Pre-Mine Vegetation, shows the site in 1998.

Table 2.04.3-1 "Acreages by Land Use, New Horizon Mine Permit Area" lists the various land uses within the permit area and the corresponding acreages. A discussion of these various land uses follows.

Note: for the 2006 Mid Term Review, pre-mine land uses have been classified according to the listings in Rule 1.04 and a new map has been added to show these uses. This map is Map 2.04.3 Pre-Mine Land Use. Swale Drainage areas are now listed as Pastureland - Irrigated - Swale (IPSW). Ponds are called Developed Water Resource-Ponds. There are no Facility areas. Cropland consists of irrigated orchards (ICO) and irrigated ~~grass~~alfalfa hay (IC) areas that are extensively managed. There are other crop areas in the vicinity for silage corn ~~and alfalfa~~ but none in the permit area. Pastureland consists of Irrigated Pasture that is some mix of alfalfa and/or grass hay. The former category Irrigated Hayland has been replaced by primarily Irrigated Pastureland because of lower levels of management, less frequent baling in addition to soils that are not optimum. includes Pastureland Irrigated Hay (IPH), which is alfalfa/grass or grass pastureland that is harvested for hay most years and Pastureland Irrigated Grass (IP), is grassdominated pastureland that is generally not harvested for hay.

We believe that one area of former Irrigated Hayland should be classified as Irrigated Cropland on the Morgan property due to consistent baling of hay and good soils. ~~On the other hand, two areas~~

~~of irrigated cropland (25.02 acres) that are shown on Map 2.04.3, which were mapped in 1987 as Cropland immediately north and west of Pond 7 have been determined to be irrigated pasture areas instead. This is due to poor soils (See Section 2.04.9) and the fact that most of this land is on the Burbridge property and he did not manage it intensively. As stated in Section 2.04.10 Vegetation Information, “Burbridge does not manage for alfalfa in his hay fields and does not regularly renovate these fields because of shallow soils and rock ledges. Consequently these haylands are dominated by a variety of desirable and increaser grasses, red and white Dutch clover, weedy forb species and occasional alfalfa plants”. No changes have been made to the boundaries and classifications of these areas from the 1987 and 1999 studies, however, these~~The majority of soils on the Morgan property in the permit area are prime agricultural land soils, as determined by the NRCS in 2008. These changes are reflected in the ~~post-mine land uses for reclamation~~following maps: 2.04.3 Pre-Mine Land Use and 2.04.10-1 Pre-Mine Vegetation. In the 1999 soils and vegetation study conducted by Jim Irvine of IRI, a number of Irrigated Pasture areas and Irrigated Pasture Swales were identified on the Morgan property. Subsequent discussions with the Morgans have taken place where they believe that over the years, the historic use of these areas has been Irrigated Cropland. For this reason, the Irrigated Pasture areas have been re-designated as Irrigated Cropland for the Permit Revision 06.

The San Miguel Power property, east of 2700 Road has been both irrigated and used as dryland in the past. Although San Miguel does not have ditch rights, they are supplied water by WFC from Calamity Draw. For this reason, the land has been classified as Irrigated Pasture (IP).

There are 5 types of Rangeland - Sagebrush (SG), Sagebrush 1 (SG-1) and Sagebrush 2 (SG-2), Floodplain and Deciduous Trees. Roads (R) are classified as Commercial use and Farmsteads and associated open space disturbances are now classified as Residential use. Existing Disturbed lands have now been called Residential - Open Space Disturbed Areas. No boundaries of these land use areas have been changed; only the classification categories to comply with Rule 1.04.

~~The table below lists all the revised pre-mine land use types and corresponding acreages.~~

Table 2.04.3-1 Acreages by

For the 2009 Permit Revision, a slight boundary adjustment due to more accurate surveying has changed the permit boundary from 823.56 acres to 827.44 acres. The changes all occur on the extreme west edge of the permit area on the Morgan property and the WFC property.

4.0 Description of Pre-Mine Land Use, New Horizon #2 Mine Permit Area Areas

See Map 2.04.3 for the exact location of all of these areas. Detailed descriptions of the pre-mine vegetation types are included in Section 2.04.10 Vegetation Information. The entire permit area is 827.44 acres. Of this total, 764.06 acres will be disturbed.

4.1 Cropland - Irrigated Orchards (ICO) This category includes a few abandoned fruit tree orchards from decades ago. They were not in well kept condition during the initial permitting in 1987.

4.2 Cropland - Irrigated Alfalfa Hay (IC) These areas have some combination of grass and alfalfa which are well-managed, irrigated consistently with application of fertilizer and harvested. Alfalfa is the predominant plant. These lands have primarily prime farmland soils, as determined by the NRCS in 2008. See discussion in this section on Prime Farmlands and prime Farmland Soils.

4.3 Cropland - Irrigated Small Grain (ICSG) These areas were historically used for small grain production. Within the permit area, soils where this type is delineated are generally shallow and boggy, and not considered to have a high crop production potential. During the baseline sampling year (1987) it was noted that the two ICSG areas were not tilled after harvest the previous year and were allowed to volunteer barley, along with annual and perennial weeds.

4.4 Pastureland - Irrigated Hay (IPH) These areas have some combination of grass and alfalfa which are not as well-managed as cropland, and not irrigated consistently but better managed than irrigated pasture. IPH areas are generally baled, where irrigated pasture areas are not. Vegetation cover is still very good, depending on the soils of the actual site.

4.5 Pastureland - Irrigated Grass (IP) These areas are primarily grasses but are not as well managed as Pastureland - Irrigated Hay, have poorer soils and do not yield as much vegetation.

None of these areas are baled.

4.6 Pastureland - Irrigated Swales (IPSW) These areas are generally low lying areas which drain irrigated fields around them. They are not directly irrigated but usually have substantial water from the surrounding fields. They can have wetland plants and these areas are not managed or baled.

4.7 Rangeland - Sagebrush (SG), Sagebrush -1 (SG-1) and Sagebrush -2 (SG-2) These areas are natural dryland areas that have extensive shrub cover but few trees and herbaceous cover. Sagebrush is the predominant shrub.

4.8 Pinyon-Juniper (PJ) These areas are natural rangeland areas that have extensive cover of pinyon juniper trees. This is a minor portion of the permit area.

4.9 Rangeland - Deciduous Trees(DT) These areas are natural dryland areas that have extensive deciduous tree cover. This is a minor portion of the permit area.

4.10 Commercial - Roads (R) This category includes 2700 Road and BB Road through the permit area. 5Th Street Road is also included in this category. These will be removed by mining and rebuilt prior to final bond release of the permit area.

4.11 Floodplains (FP) These areas are generally within the 100 year floodplain of Tuttle Draw. None of these areas are to be disturbed.

4.12 Residential - Farmsteads (F) These areas include dwellings, outbuildings, sheds, storage areas, barns, driveways, parking areas, and other miscellaneous residence related disturbance.

4.13 Residence - Open Space Areas (D) These areas are pre-permit disturbed areas that may contain some abandoned residences, may have some older mine related areas, or other disturbances.

4.14 Developed Water Resource - Ponds (P) These areas are pre-mine ponds generally used for stock watering during grazing in or nearby to irrigated pastures.

The table below lists all the revised pre-mine land use types and corresponding acreages. Each of the acreages are from individual areas on Map 2.04.3.

Table 2.04.3-1 Pre-Mine Land Use Areas by Type

IPH	IP	IC	ICSG	ICO	IPSW	SG	SG-1	SG-2	PJ	DT	FP	R	F	D	P	Total
18.61	17.86	47.87	15.34	0.46	1.66	0.45	4.84	0.41	0.76	3.94	8.80	7.31	1.07	0.42	0.27	
31.75	5.61	3.30	9.72	0.43	14.47	0.28	3.13	4.54	0.39	2.76	0.04	3.38	0.65	2.70	0.79	
3.18	2.48	1.04			1.20	3.52	2.90	9.49			0.17	1.19	3.39	0.29	0.38	
11.58	2.03	0.74			23.12	3.07	1.27	2.00			0.91		0.84	0.22	0.31	
54.11	1.90	0.16			12.81	7.93	9.71						2.63	1.54	0.22	
11.39	1.29	37.61			0.23	0.62	3.05						0.94	0.07	0.13	
10.24	1.07	4.45			0.21	2.00	0.56						3.78	3.51	0.13	
18.90	12.56	2.98			0.47	0.24	0.23						1.62	0.77	0.24	
	1.88				0.43	6.36	3.17						1.37	0.81	0.16	
	0.32				0.27	0.74	1.89						2.43	4.30	0.16	
	21.89				0.14	0.32	18.05						1.93	0.42	0.16	
	63.96				1.46	0.11	16.20							2.00	0.24	
	3.39				0.78		4.07							0.48	0.08	
	3.87				0.11		10.97							0.83	0.08	
	0.97				1.11		1.25								0.16	
	0.28				2.13										0.27	
	99.62				1.33										0.09	
	2.01				0.29										0.24	
	1.99				0.96										0.20	
	9.14				2.28											
	2.64															
	0.16															
	4.64															
	4.13															
	6.13															
	2.85															
	3.04															
	4.07															
-																
159.76	281.78	98.15	25.06	0.89	65.46	25.64	81.29	16.44	1.15	6.70	9.92	11.88	20.65	18.36	4.31	827.44

Table 2.04.3-2 Pre-Mine Land Use by Acreage and % of Total

Land Status Category	Acres	% of Total Acres
Cropland - Irrigated Orchards <u>(ICO)</u>	0.89	0.11
Cropland - Irrigated Grass/Alfalfa <u>Alfalfa</u> Hay <u>(IC)</u>	<u>98.15</u>	<u>11.86</u>
<u>Cropland - Irrigated Small Grain (ICSG)</u>	25.02	3.04
	<u>6</u>	<u>3</u>
Total Cropland	1254.91 <u>10</u>	3.15 <u>.00</u>
Pastureland - Irrigated Hay <u>(IPH)</u>	240159.0 <u>976</u>	2519.54 <u>31</u>
Pastureland - Irrigated Grass <u>(IP)</u>	346281.5 <u>978</u>	384.44 <u>05</u>
Pastureland - Irrigated Swale <u>(IPSW)</u>	7565.00 <u>46</u>	9.11 <u>7.91</u>
Total Pastureland	65047.68 <u>00</u>	73.06 <u>61.27</u>
Rangeland - Sagebrush (original) <u>(SG)</u>	25.54	3.10
	<u>64</u>	
Rangeland - Sagebrush -1 <u>(SG-1)</u>	81.23	9.86
	<u>9</u>	<u>2</u>
Rangeland - Sagebrush -2 <u>(SG-2)</u>	16.43	21.00
	<u>4</u>	<u>99</u>
Rangeland - Deciduous Trees <u>(DT)</u>	6.70	0.81

Rangeland - Floodplain <u>(FP)</u>	9.73 <u>92</u>	1.48 <u>20</u>
Rangeland - Pinyon Juniper <u>(PJ)</u>	1.15	0.14
Total Rangeland	1401.78 14	17.09 6
Commercial - Roads <u>(R)</u>	7.25 011.88	1.44 <u>1.44</u>
Total Commercial	7.28 011.88	1.44 <u>1.44</u>
Residential - Farmsteads <u>(F)</u>	20.67 <u>5</u>	2.54 <u>0</u>
Residential - Open Space <u>Areas Disturbed (D)</u>	2218.77 <u>36</u>	2.76 <u>22</u>
Total Residential	439.44 01	54.27 71
Developed Water Resources - Stock Ponds <u>(P)</u>	4.47 <u>31</u>	0.54 <u>2</u>
Total Developed Water Resources	4.47 31	0.54 2

TOTAL	<p>823.56</p> <p>100.00</p> <p>Descripti</p> <p>on of</p> <p>Pre-Mine</p> <p>Areas</p> <p>See Map</p> <p>2.04</p> <p>.3</p> <p>for the</p> <p>exact</p> <p>location of</p> <p>all of</p> <p>these</p> <p>areas.</p> <p>Detailed</p> <p>descriptio</p> <p>ns of the</p> <p>pre-mine</p> <p>vegetation</p> <p>types are</p> <p>included</p> <p>in Section</p> <p>2.04</p> <p>.10</p> <p>Vegetatio</p> <p>n</p> <p>informatio</p> <p>n.</p> <p>The entire</p> <p>permit</p> <p>area is</p> <p>823.56</p> <p>acres. Of</p> <p>this total,</p>	<p><u>100.00</u></p>
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5.0 General Discussion of the History and Land Use of the Nucla / New Horizon Mine Permit Area

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An understanding of the major land use of irrigated agriculture is benefitted by an insight into the background of the present community and land use in the Nucla area. Peterson (1949) and Mercer (1967), respectively, authored articles on the history of the town of Nucla and the Colorado Cooperative Company, the latter being the driving force behind the present situation at Nucla. The following summary discussion is taken from the above two references.

In 1894, the Colorado Cooperative Company was incorporated in Denver in order to establish a utopian or socialist community somewhere in Colorado with agriculture as the basis for the economy of the community. Based on evaluations of many sites, it was decided to settle in an area known as Tabeguache Park located a few miles north of the San Miguel River and Naturita, Colorado - then a post office and stage stop. The site was selected because of the availability of cheap federal lands under several Acts, including the Desert Land and Homestead Acts, and the positive results of a survey that indicated water could be brought from the San Miguel River to the Park. The first group of people arrived at Naturita in 1895 and began farming in that area while surveying the ditch, building roads, and establishing a sawmill. In 1896, the colony established the site of Pinon where Cottonwood Creek enters the San Miguel, while also beginning work on the ditch five miles upstream. All lumber for the town, trestles, and flumes, as well as lath for fruit boxes in Montrose, was supplied by the Company's sawmill 13 miles up Cottonwood Creek. Work went slow because of the amount of cut and fill, rock blasting, and trestle/flume construction needed to complete the canal. Worker dissatisfaction caused many delays for a project that was dependent on community cooperation and effort. This was overcome by contracting the ditch work to shareholders for credits (redeemed at the Company store) or shares with the requirement that a given amount of ditch in a certain time frame be completed. By 1904, the first water reached the east side of First Park (used in preference to Tabeguache Park by the local population) and lands which had been filed on by private individuals were cleared, tilled, and irrigated. By 1910, the ditch had been extended to Second Park north of Tuttle Draw. In 1905, the town of Pinon was moved essentially lock, stock, and barrel to the present site of the town of Nucla - a name derived from the Latin word Nucleus. The ditch, an accomplishment for late 19th century technology, has a fall of 4 feet per mile and is approximately 20 miles long. At one time, the Cottonwood Creek trestle and flume was the highest and longest in the world, but has since been replaced with a siphon. Though a store, dairy, sawmill, and laundry, along with the ditch were Company businesses and cooperatively owned and operated, only the ditch remains a cooperatively owned and run venture.

The land use and ownership patterns today are probably a reflection on the early days of the Colorado Cooperative Company. Mercer (1967) states that individuals were permitted water rights on up to 40 acres for each share of stock, though it required several shares of water to adequately irrigate 40 acres. Land ownership today is usually in 40-acre parcels or multiples thereof. Years of operations and management have resulted in most of the arable land that can be reached by irrigation to be put into one form of agricultural production or another. This includes the majority of First Park and a large portion of Second Park. Irrigation of potential farm lands on Third Park, located across Coal Canyon north of Second Park has not been carried out because of a lack of a water delivery system. The extension of the Colorado Cooperative Ditch across Coal Canyon and onto Third Park would be prohibitive at this time in terms of engineering, construction requirements, and cost (Mrs. Tom Garvey, personal communication, June 1987).

The areas of deeper, more productive soils within the permit areas are used for alfalfa hay production, crops such as annual grains and corn silage, and irrigated pasture. ~~Some of the irrigated hayland and much~~ of the irrigated pasture contain areas of shallow soils or rock ledges and outcrops at or near the surface (see Tab 6, Geology and Tab 7, Soils). This places restrictions on management and production. Lands within the permit area are used for pasture rental, hay sales, as a pasture or hay base, and support facilities for livestock run on adjacent private and Federal ground during the spring, summer, and fall, or as hobby or retirement properties. The latter are used to produce some hay or pasture for the few livestock owned by these operators. Farm ground on the western portion of the permit area is used for production of grain, irrigated alfalfa or corn silage, some of which may be sold as cash crops. Generally, these crops are fed back to livestock run by the operator. Irrigated Cropland also occurs within the western portion of the permit area. One abandoned orchard occurs within the permit area. Orchards established early after the establishment of Nucla, were used principally for cash crop with a large portion of the production going to the mining districts around Telluride. By the 1940s, the market demand was gone and the orchards were abandoned (James Johnson, personal communication, May 1987). These orchards are no longer managed and only local incidental use is made of them now. Some of these orchards may, at least seasonally, be grazed along with adjacent irrigated pasture. Property ownership and vegetation and production information for the permit area can be found in Section 2.03, (Legal, Financial, Compliance and Related Information) and Section 2.04.10 (Vegetation Information), respectively.

Because of the proximity of the site to the town of Nucla, a small amount of residential use (outside of the farmsteads) has occurred in the northeast and southeast portions of the permit area. Five

homesites occur in these areas and range from mobile homes to traditional permanently located homes. Though residential would be one of the highest and best uses of the land, the present status of the local economy ~~most~~ probably precludes any ~~additional~~ significant residential expansion in the area.

There has been limited underground mining activity within the permit area. In addition to the reclaimed New Horizon 1 surface coal mine northwest of the mine area, three underground coal mines adjacent to the permit area were operated by local individuals in the past. The abandoned Independence or Oberding Mine is located about 1,300 feet north of the study area in the NE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 31 (T47N R15W). This mine covers approximately 15 acres underground and operated during the 1920's and 1930's, though there is evidence that some activity occurred as late as the early 1960's. The abandoned Nix Mine is located in the NE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 36 (T47N R16W). This mine operated until about 1926 and covers about seven acres of underground workings. The Tuttle Mine (NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 31 (T47N R15W) was marked by a waste dump and some discarded mine rail. Period of operation and extent of mining is unknown, but both are presumed to be minor. All three operations mined the lower Dakota seams and appear to have been involved only in local coal sales.

The land use within the permit ~~areas~~ area is predominantly agriculture using irrigation. Areas of non-irrigated sagebrush rangeland occur as scattered remnants and are used for livestock grazing. Irrigation has allowed for a higher and better land use to be attained than if natural precipitation was relied on for agricultural use. With the latter, only grazing of rangeland by livestock (at low stocking rates) and occasional use of wood products from the pinyon-juniper stands would be attainable.

For further background information on land use, the reviewer is directed to Section 2.03 (Legal, Financial, Compliance and Related Information); Section 2.04.4 (Cultural and Historic Resources Information); Section 2.04.9 (Soils Resource Information); Section 2.04.10 (Vegetation Information); and Section 2.04.11 (Fish and Wildlife Resources Information).

Literature Cited

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